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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,288	08/30/2006	Liu Sheng	8737-000042/US/NP	5962
27572 7590 05/21/2008 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER DOAN, PHUOC HUU	
			ART UNIT 2617	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,288	Applicant(s) SHENG ET AL.	
	Examiner PHUOC H. DOAN	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,32 and 33 is/are rejected.
- 7) ☒ Claim(s) 2-31,34 and 35 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/23/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, and 32-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kayama (US Pub No: 2003/0095538) in view of Padovani (US Pub No: 2007/0066320).

As to claim 1, Kayama discloses a method of performing resource allocation and rate control of Dedicated Channels DCHs for non-realtime data services in a code division multiple access communication system (page 3, par [0043], page 8, par [0090] “ the transmission packet of information for which real time characteristics are not required is referred to as a non real time packet”), wherein said DCHs comprise uplink DCHs and downlink DCHs (page 8, par [0091] “Fig. 8 with description; and that indicates the uplink and downlink channel capacity”), and the resource and rate allocation of the uplink DCH is performed on the basis of that of the downlink DCH

(page 8, par [0087] [0090] “the downlink control channel 6 is taken as the last allocation in associated with the uplink packet channel 207”), the method being characterized by comprising the steps of: a) determining channel states of the downlink DCHs for non realtime data services (page 8, par. [0087] “radio resources by the control signal 6d of the downlink control channel 6 and uses the same slots for transmitting the non real time packets 8”), wherein said DCH channel states include: a blocked state, a macro-diversity state, an available state, an idle state and a frozen state (page 8, par [0090] to page 9, par [0095] “allocates the received power 207; and the received power 271 of the usable radio resources allocated to the users that use for transmitting the non real time packets”); b) determining states of users using said downlink DCHs (page 8 par [0087-0088]), wherein said user states include: an occupying user (page 8, par [0084] “allocated as the priority radio resources to the users”), a common newly-added user, a handover newly-added user, an occupied user, a maintenance user or a macro-diversity user (page 8, par [0084], [0090-0093], page 9, par [0094-0095]); and c) correlating the channel states determined in step a) with the user states determined in step b), and dynamically allocating DCHs with certain rates to the users in the different user states according to a wireless measurement result measured by a current transmission channel (page 3, par

[0042]), based on the priority and fairness requirements (page 3, par [0042-0043] “transmission rates necessary to transmit the information vary depending on Quality of Service, for example, the non real time packet having a long acceptable delay time in packet of transmitted data”).

However, Kayama does not show the dedicated channels.

In the same filed of endeavor, Padovani shows or discloses the dedicated channel (page 11, par [0099-0101] "forward traffic channel is a dedicated channel in CDMA frame as described in Fig 4A-G"). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a dedicated channel in order to improve data rates in frame.

As to claim 32, Kayama further discloses the method according to claim 1, wherein a result of said wireless measurements comprises a traffic measurement result (page 9, par [0094] “the radio resource controller 25 sets the remaining received power as the open radio resources used for transmitting the non real time packet”), a flow measurement result of a transmission channel or a channel utilization ratio measurement result (page 10, par [0114] “the receive control signals including periodic timing for reporting the quantity and receive the allocation of the radio resources,

which is reviewed periodically, and can prevent unnecessary radio resources being allocated”).

As to claim 33, Kayama further discloses the method according to claim 1, wherein said code division multiple access communication system is a wide code division multiple access communication system (page 8, par [0090]).

Allowable Subject Matter

3. Claims 2-31, 34-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As to claim 2, the prior art of record does not disclose the method according to claim 1, wherein the respective DCH channel states in said step a) are determined as follows: Blocked state: a downlink DCH occupancy timer is started immediately after a DCH is allocated, and when the timer indicates a time less than $T_{sub.k,min.sup.DL}$, no matter how traffic, flow or channel utilization ratio and other wireless measurements of the DCH changes, channel resources of the DCH are always blocked and cannot be occupied

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by other users; if a DCH is occupied for a time exceeding

$T_{sub.k,min.sup.DL}$ but within the maximum occupancy time

$T_{sub.k,max.sup.DL}$, and the traffic, or flow or channel utilization ratio and

other wireless measurements of the DCH is higher than a lower limit

$M_{sub.low.sup.DL}$, the channel resources will also be blocked; wherein

$T_{sub.k,min.sup.DL}$ is the minimum occupancy time of the k-th downlink

DCH and $T_{sub.k,max.sup.DL}$ is the maximum occupancy time of the k-th

downlink DCH, where $T_{sub.k,max.sup.DL} > T_{sub.k,min.sup.DL}$; and k

differentiates DCHs with different rates in an order from high to low;

Macro-diversity State: when a user of a DCH in the present cell enters a

macro-diversity state of a soft handover or a softer handover, the DCH

enters the macro-diversity state, and an occupancy timer of a downlink DCH

of the DCH is reset and pauses counting, and the DCH in this state does not

perform a rate control; Available State: when a DCH is occupied for a time

exceeding the maximum occupancy time $T_{sub.k,max.sup.DL}$, no matter

how the traffic, flow or channel utilization ratio or other wireless

measurements of the DCH varies, the DCH is always in an available state,

that is, it can be occupied by other users; in addition, if a DCH is occupied

for a time exceeding $T_{sub.k,min.sup.DL}$ but within the maximum

occupancy time $T_{sub.k,max.sup.DL}$, and the traffic, flow, or channel

utilization ratio or other wireless measurements of the DCH is lower than the lower limit $M_{sub.low.sup.DL}$, the resources of this channel will also be in an available state; Idle State: a DCH in an idle state is a DCH that is not used by any user in a current DCH channel set for non-realtime services, which is generated for the following reasons: a DCH is newly added for the adjustment of the DCH channel set for non-realtime services; a non-realtime service user ends a conversation and releases a DCH occupied thereby; a non-realtime service user performs a handover to other channels and releases a DCH occupied thereby; or a non-realtime service user performs a handover to other cells and releases a DCH occupied thereby; Frozen State: after receiving a downlink DCH resource re-allocation request, all the channels in a current downlink DCH resource pool are set in a frozen state; as for a DCH originally in a blocked state, its downlink DCH occupancy timer is paused, and all the operations of the DCH bandwidth allocation and rate control are also stopped, but the traffic, flow, or channel utilization ratio or other wireless measurements of the DCH are still performed; after the downlink DCH resource re-allocation is completed, the unchanged channels before and after the re-allocation are immediately restored into a state prior to the frozen state, and as for the changed DCHs, if a newly-assigned downlink DCH has a different rate from that of the original downlink DCH, a

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downlink DCH occupancy timer of the DCH is reset and the DCH enters a blocked state; otherwise, it enters the state prior to the frozen state, and the counting of the downlink DCH occupancy timer is resumed immediately after the DCH leaves the frozen state.

As to claim 3, the prior art of record does not disclose the method according to claim 1, wherein further comprising the step of stipulating state transfer among the respective channel states, comprising: the DCH newly-added for the re-allocation of the downlink DCH channel set for non-realtime services entering an idle state, a DCH in a blocked state entering an idle state since a user thereof ends a conversation and releases the channel, a DCH in an available state entering an idle state since a user thereof ends a conversation or performs a handover to other channels and releases the occupied channel, and a DCH in a macro-diversity state entering an idle state since a user thereof performs a handover to other cells and releases the occupied channel; DCHs in idle and available states entering a blocked state for being allocated to an occupying or newly-added user, and a DCH in a macro-diversity state entering a blocked state since its user quits the macro-diversity but still stays in the present cell; a DCH in a blocked state entering an available state when the channel occupancy time exceeding $T_{sub.k,min.sup.DL}$, and the traffic,

flow or channel utilization ratio or other wireless measurements of the DCH is lower than the lower limit $M_{sub,low,sup,DL}$, or the channel occupancy time overruns, i.e., is greater than $T_{sub,max,sup,DL}$; DCHs in idle, available and blocked states may enter macro-diversity state due to the soft handover or softer handover; and DCHs in idle, blocked, available and macro-diversity states entering and quitting a frozen state for the re-allocation of the downlink DCH channel resources for non-realtime services.

As to claim 4, the prior art of record does not disclose the method according to claim 1, wherein the respective user states in said step b) are determined as follows: Occupying User: if a downlink DCH is occupied for a time exceeding $T_{sub,k,min,sup,DL}$, while the traffic, flow or channel utilization ratio or other wireless measurements of the downlink DCH exceeds the upper limit $M_{sub,high,sup,DL}$, a user of the downlink DCH is called an occupying user; Common Newly-added User: a common newly-added user is a newly-added user since a non-realtime service user gets an initial access to a system or performs a handover from other channels to a DCH, the common newly-added user itself originally having no downlink DCH resources, and only a downlink DCH in an idle state being allowed to be allocated to a common newly-added user; and the original uplink and

downlink DCH rates of the common newly-added user being marked as zero; Handover Newly-added User: a handover newly-added user is a newly-added user due to a hard handover, a soft handover or a softer handover from other cells to the present cell, the handover newly-added user itself having no downlink DCH resources, downlink DCHs in idle and available states being allowed to be allocated to a handover newly-added user; Occupied User: a user whose downlink DCH is in an available state is called an occupied user, wherein when the downlink DCH of the occupied user is occupied by an occupying user, the occupied user immediately occupies the original downlink DCH of the occupying user, that is, the occupying user and the occupied user adopt a channel permutation mode for a direct rate switching therebetween; Maintenance User: a maintenance user is a user whose downlink DCH is in a blocked state, wherein the maintenance user does not occupy downlink DCH channel resources of other users, and meanwhile, the downlink DCH channel resources of the maintenance user cannot be occupied by other users either; Macro-diversity User: a macro-diversity user is a user whose downlink DCH is in a macro-diversity state, wherein the macro-diversity user does not occupy downlink DCH resources of other users, and meanwhile, the downlink DCH resources of the macro-diversity user cannot be occupied by other users either.

As to claim 5, the prior art of record does not disclose the method according to claim 1, wherein further comprising: the step of determining a current downlink DCH available channel set for non-realtime data services on the basis of i) realtime and non-realtime service active users of DCHs in a current cell and downlink load change information, ii) allocation of power and orthogonal variable spreading factor channel codes, or iii) information relating to a handover between a common channel and a dedicated channel, user's initial access and release, and handover user's access and release, wherein the number of DCHs in said DCH available channel set is greater than or equal to the current number of active users for the non-realtime services.

As to claim 8, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises: based on downlink loss levels, allocating DCH channel resource allocation queues with different priority levels to users of the different downlink loss levels.

As to claim 12, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically

allocating a DCH with a certain rate to a soft-handover newly-added user through the following sub-steps, said sub-steps comprising: i) arranging said soft-handover newly-added user in the downlink DCH resource allocation queue with the first priority; ii) setting an initial downlink DCH rate of said soft-handover newly-added user to be the same as downlink DCH rates of other wireless links in an active set of said user, and carrying out an uplink and downlink access control discrimination; iii) searching for a downlink DCH for said downlink rate from downlink DCHs in an idle state, and allocating the downlink DCH in the idle state to said soft-handover newly-added user; iv) searching for a downlink DCH for said downlink rate from downlink DCHs in an available state, and allocating the downlink DCH in the available state to said soft-handover newly-added user; v) based on the downlink DCH allocated to said soft-handover newly-added user, allocating an uplink DCH with a corresponding rate to said user; and vi) canceling said soft-handover newly-added user from the allocation queue with the first priority.

As to claim 16, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically allocating a DCH with a certain rate to a hard-handover newly-added user

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through the following sub-steps, said sub-steps comprising: i) arranging said hard-handover newly-added user in the downlink DCH resource allocation queue with the first priority; ii) setting a downlink DCH rate of said hard-handover newly-added user to be the same as its original downlink DCH rate, and carrying out a downlink access control discrimination; iii) determining whether a value allowed by the uplink access control and being equal to or smaller than an original uplink DCH rate of the hard-handover newly-added user can be found in an uplink DCH rate value domain corresponding to a downlink DCH with the downlink DCH rate; iv) searching for a downlink DCH for said downlink rate from downlink DCHs in an idle state, and allocating the downlink DCH in the idle state to said hard-handover newly-added user; v) searching for a downlink DCH for said downlink rate from downlink DCHs in an available state, and allocating the downlink DCH in the available state to said hard-handover newly-added user; vi) based on the downlink DCH allocated to said soft-handover newly-added user, allocating an uplink DCH with a corresponding rate to said user; and vii) canceling said hard-handover newly-added user from the allocation queue with the first priority.

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As to claim 21, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically allocating a DCH with a certain rate to a common newly-added user through the following sub-steps, said sub-steps comprising: i) arranging said common newly-added user in the downlink DCH resource allocation queue with a second priority; ii) determining whether there exists a downlink DCH in an idle state and allowed by the access control, and allocating the downlink DCH to said common newly-added user; iii) determining whether there is an uplink rate allowed by the uplink access control within a value domain range of an uplink DCH rate corresponding to said downlink DCH rate, and allocating the maximum of the uplink DCH rate allowed by the uplink access control to said common newly-added user; and iv) canceling said common newly-added user from the allocation queue with the second priority.

As to claim 24, the prior art of record does not disclose the method according to claim 1, wherein said step c) further comprises dynamically allocating a DCH with a certain rate to an occupying user through the following sub-steps, said sub-steps comprising: i) arranging said occupying user in the downlink DCH resource allocation queue with the second

priority; ii) determining whether there exists a downlink DCH in an idle state allowed by the downlink access control and having a rate higher than an original downlink rate of said occupying user, and allocating the high-rate downlink DCH to said occupying user; iii) determining whether there exists a downlink DCH in an available state allowed by the downlink access control and having a rate higher than the original downlink rate of said occupying user, and allocating the high-rate downlink DCH to said occupying user; iv) determining whether the value domain range of the uplink DCH rate corresponding to a rate of the high-rate downlink DCH contains an original uplink DCH rate of said occupying user, and setting the uplink DCH rate of said occupying user as its uplink rate; and v) canceling said occupying user from the allocation queue with the second priority.

As to claim 30, the prior art of record does not disclose the method according to claim 1, wherein further comprising: the step of starting a timer for timing downlink DCH occupancy after a DCH is allocated, and the step of determining a state of said DCH by comparing said timer with the predetermined downlink DCH maximum occupancy time $T_{sub.k,max.sup.DL}$ and minimum occupancy time $T_{sub.k,min.sup.DL}$, in

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combination with the comparison between wireless measurements of said DCH and the lower limit $M_{sub,low,sup,UL}$ of the wireless measurements.

Dependent claims are allowed by virtue of dependency in independent claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUOC H. DOAN whose telephone number is 571-272-7920. The examiner can normally be reached on 9:30 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, VINCENT HARPER can be reached on 571-272-7605. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VINCENT P. HARPER/
Supervisory Patent Examiner, Art Unit 2617

/PHUOC DOAN/
05/19/08